The islands of the Svalbard archipelago offer some of the most exciting opportunities for geological studies. WHY?

Knowledge gained through the Longyearbyen CO₂ pilot project can contribute to complex storage/reservoir units projects worldwide.

**The realization of CO₂ storage on Svalbard:**

**Wells and pumps - a key to knowledge**

- 8 drilled wells up to 1000 m deep, analyzing core samples and outcrop data
- Pressure tests and fracturing to gain knowledge of the reservoir
- Conducted extensive seismic research into the region
- Modelled the reservoir
- Conducted sea bed geology for pockmarks and their activity and cored the permafrost for a better understanding of how this will perform as a top seal.

**Fractures guide fluid flow**

- Potential fluid migration pathways
- Low matrix permeability (<2mD)
- Moderate porosity (5-20%)

**Fluid migration pathways to sea floor seepage**

- High-resolution multibeam bathymetric data from SA1 (Adventfjorden); showing the distribution of pockmarks.
- High artic drilling to 1000 m and its challenges
- State of the art drilling
- Contributing to research
- Stale of the art drilling: High artic drilling to 1000 m and its challenges
- Conducted sea bed geology for pockmarks and their activity and cored the permafrost for a better understanding of how this will perform as a top seal.

**Geophysics reflects the subsurface**

- Seismic: Norsar on behalf of the CO₂ Lab continues to run an extensive seismic program.
- Contributions from geophysical methods; red circles - microseismic network at the CO₂ Lab site
- Yellow triangles - broadband seismic stations
- Map view of Adventdalen and seismic networks.

**Fluids are mobile even in a frozen ground**

- Coring the permafrost
- Since the project started in 2007, the permafrost has been considered as an additional security, acting as a top seal to the reservoir.
- With this considered, the lab has funded research to this effect.
- Under the guidance of Hanne Christian and her team from UNIS, in 2014 DH8 was drilled and cored. The aim was to find out more about permafrost characteristics.

**Rocks below Longyearbyen surface 20KM away**

**From Source to solution in a small loop**

- Started over a cup of coffee and has now realised:
- 8 drilled wells up to 1000 m deep, analysing core samples and outcrop data
- Pressure tests and fracturing to gain knowledge of the reservoir
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- Conducted sea bed geology for pockmarks and their activity and cored the permafrost for a better understanding of how this will perform as a top seal.

**Svalbard has become a well-known location for studying processes related to climate change.**

Many Thanks to our loyal partners:

Conoco Phillips, Store Norske, Statoil, Lundin, LNS, Baker Hughes, Research Council of Norway - Demo CLimit SSF, Svalbard/Njåfjord, UNIS, University of Göttingen, University of Oslo, SUCCESS, UNICIPR, University of Bergen, Sintef, Statkraft, NGU, NGI, and NTNU

For more information on the Longyearbyen CO₂ Lab - http://co2-ccs.unis.no/